What is SARE?

Since 1988, the Sustainable Agriculture Research & Education (SARE) program has been the go-to USDA grants and outreach program for farmers, ranchers, researchers and educators who want to develop innovations that improve farm profitability, protect water and land, and revitalize communities. To date, SARE has awarded over $360 million to more than 8,174 initiatives.

SARE is grassroots with far-reaching impact

Four regional councils of expert practitioners set priorities and make grants in every state and island protectorate.

SARE communicates results

SARE shares project results by requiring grantees to conduct outreach and grower engagement; and by maintaining an online library of practical publications, granteeproduced information products and other educational materials.

Project Highlight: Fruit Bagging Reduce Reliances on Pesticides

When Clemson University fruit specialist Juan Carlos Melgar suggested putting a paper bag over a peach to detract insects and diseases during production, farmers laughed. But when his SARE-funded trials showed that the technique protects the fruit from devastating brown rot, marauding insects like plum curculio and even hungry birds, producers and backyard growers started paying attention.

Researchers found that bagging peaches between petal fall and harvest reduces pesticide use while increasing yields and maintaining flavor. Even though it involves more labor, Melgar estimated that bagging can increase revenue by $95 per tree in an organic system when the fruit is sold directly to consumers. “We’ve gotten a lot of positive responses from farmers all over the country as a result of the research study,” said Melgar.

Fruit bagging for protection is a common strategy in Asia. With South Carolina ranked second in the nation behind California in peach production at 77,000 tons, researchers at Clemson felt that applying the technique to orchards was a worthwhile endeavor because peach growers in the southeastern U.S. face very high pest and disease pressures. Melgar is taking this research to a regional level with a newly acquired $1 million USDA-NIFA grant, applying the technique to more orchards in South Carolina, Georgia and Florida.

For more information on this project, see sare.org/projects, and search for project number OS16-094.

SARE in South Carolina

southern.sare.org/sare-in-your-state/south-carolina

$4,557,644 in total funding

75 grant projects

(since 1988)

For a complete list of grant projects state by state, go to www.sare.org/state-summaries
SARE Grants in South Carolina

Total awards: 75 grants
- 19 Research and Education
- 6 Sustainable Community Innovation
- 12 Professional Development Program
- 20 Farmer/Rancher
- 8 Graduate Student
- 10 On Farm Research/Partnership

Total funding: $4,557,644
- $3,361,065 Research and Education
- $43,620 Sustainable Community Innovation
- $720,833 Professional Development Program
- $182,885 Farmer/Rancher
- $106,864 Graduate Student
- $142,377 On Farm Research/Partnership

Find a complete list of projects on page 3.

SARE's Impact

53 percent of producers report using a new production technique after reading a SARE publication.

79 percent of producers said they improved soil quality through their SARE project.

64 percent of producers said their SARE project helped them achieve higher sales.

Learn about local impacts at: southern.sare.org/sare-in-your-state/south-carolina

Contact Your SARE State Coordinator

SARE sustainable ag coordinators run state-level educational programs for Extension and other ag professionals, and many help grant applicants and recipients with planning and outreach. Visit southern.sare.org/state-pages/south-carolina to learn more.

Joshua Idassi
South Carolina State University
(803) 878-9038
jidassi@scsu.edu

Matt Smith
Clemson University
(843) 519-0464
mcs5@clemson.edu

For detailed information on SARE projects, go to www.SARE.org

SARE is funded by the USDA’s National Institute of Food and Agriculture (NIFA).

This report includes summaries of competitive grant programs only. Some competitive grant programs that are no longer offered may be included or excluded from the totals in this report depending on the grant program and SARE region.
South Carolina has been awarded $4,557,644 grants to support 71 projects, including but not limited to, 15 research and/or education projects, 12 professional development projects and 20 producer-led projects. South Carolina has also received additional SARE support through multi-state projects.

<table>
<thead>
<tr>
<th>Project #</th>
<th>Project Title</th>
<th>SARE Support</th>
<th>Project Leaders</th>
</tr>
</thead>
</table>
| LS22-366  | Development of Sustainable Strategies for Managing Bacterial Diseases and Improving Tree Health in the Peach Production System | $371,000     | Hehe Wang  
Clemson University  
Juan Carlos Melgar  
Clemson University  
Guido Schnabel  
Clemson University  
Dr. Michael Vassalos  
Clemson University  
Dr. Rongzhong Ye  
Clemson University |
| LS22-369  | Establishing an Organic Watermelon Industry in South Carolina                 | $369,999     | Matthew Cutulle  
Clemson University, CREC  
Dr. Bhupinder Farmaha  
Clemson University  
Dr. Shaker Kousik  
USDA-ARS- United States Vegetable Lab  
Dr. Amnon Levi  
USDA-ARS-United States Vegetable Lab  
Brian Ward |
| LS22-387  | Wholesale Market Success For Limited Resource Gullah Farmers                 | $49,500      | Walter Mack  
Gullah Farmers Cooperative Association |
| LS22-374  | Cover crop inter-seeding in organic corn production to reduce resource inputs and soil disturbance and enhance pest control and farm profitability | $371,000     | Dr. Sruthi Narayanan  
Clemson University  
Dr. Carmen Blubaugh  
University of Georgia  
Dr. Joshua Idassi  
South Carolina State University  
Dr. Dave Lamie  
Clemson University  
Dr. Meghna Tallapragada  
Temple University  
Dr. Rongzhong Ye  
Clemson University |
| LS21-359  | Strengthening Farmer-consumer Connections for Sustainable Agricultural Systems | $213,954     | Courtney Quinn  
Furman University  
Dr. Karen Allen  
Furman University  
Dr. John Quinn  
Furman University |
| LS21-355  | Gullah/Geechee Agro-Culture: Sustaining Culture to Sustain Agriculture in the Lowcountry | $341,346     | Dr. Najmah Thomas  
University of South Carolina Beaufort |
| LS19-306  | Utility of Anaerobic Soil Disinfestation and Organic Herbicides for Weed and Disease Management in Organic Solanaceous Vegetable Systems | $293,470     | Matthew Cutulle  
Clemson University, CREC |
**Incorporating Natural, Non-toxic Arthropod Resistant Tomato Varieties into Southern Production Systems**

Incorporating Natural, Non-toxic Arthropod Resistant Tomato Varieties into Southern Production Systems $299,963 Juang-Horng Chong Clemson University

**Improving Silvopasture Systems in the South: Identification of Suitable Forage Crops and Enhancement of Environmental Quality in Upland Forests**

Improving Silvopasture Systems in the South: Identification of Suitable Forage Crops and Enhancement of Environmental Quality in Upland Forests $135,487 Dr. John Quinn Furman University

**Improvement of the safety of food handling practices on small farms**

Improvement of the safety of food handling practices on small farms $200,000 Dr. Paul Dawson Clemson University

**Expanding the grazing season for sustainable year-round forage-finished beef production**

Expanding the grazing season for sustainable year-round forage-finished beef production $163,000 Susan Duckett Clemson University

**Development and Integration of Sustainable Agriculture Core Curriculum Training into the Southern Region Extension Education System**

Development and Integration of Sustainable Agriculture Core Curriculum Training into the Southern Region Extension Education System $241,000 Dr. Geoff Zehnder Clemson University

**Creating a value chain system for local and regional farm products**

Creating a value chain system for local and regional farm products $19,310 Dr. Geoff Zehnder Clemson University

**Suppression of weeds and other pests in fresh market vegetables using wild radish cover crop**

Suppression of weeds and other pests in fresh market vegetables using wild radish cover crop $173,125 Jason Norsworthy Clemson University

**Evaluation of Low-Input, No-Till, No-Herbicide Continuous Grazing System for Dairy Cows**

Evaluation of Low-Input, No-Till, No-Herbicide Continuous Grazing System for Dairy Cows $118,911 Jean Bertrand Clemson University

### PROFESSIONAL DEVELOPMENT PROGRAM GRANTS

<table>
<thead>
<tr>
<th>Project #</th>
<th>Project Title</th>
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</tr>
</thead>
<tbody>
<tr>
<td>SPDP22-15</td>
<td>Training Educators in the Southern Region Using Aquaponics as a Sustainable Agriculture Solution</td>
<td>$71,980</td>
<td>Dr. Lance Beecher Clemson University Ben Calhoun Greenwood Area SBDC Roland McReynolds Carolina Farm Stewardship Association</td>
</tr>
<tr>
<td>SPDP21-01</td>
<td>Train the Trainers: Reducing impacts from harmful algal blooms in livestock water sources in South Carolina</td>
<td>$79,975</td>
<td>Dr. Debabrata Sahoo Clemson University Dr. Matthew Burns Clemson University Mark Nettles South Carolina State University, 1890 Research and Extension Heather Nix Clemson University Cooperative Extension Dr. Michael Vassalos Clemson University Sarah White Clemson University</td>
</tr>
<tr>
<td>ES19-150</td>
<td>Advanced Soil Health Training for South Carolina Agriculture Professionals</td>
<td>$79,847</td>
<td>Kelly Flynn Clemson University</td>
</tr>
<tr>
<td>ES17-137</td>
<td>Wholesale Success: Building the capacity of farmers to meet demand for locally and sustainably grown produce</td>
<td>$78,008</td>
<td>Dr. Geoff Zehnder Clemson University</td>
</tr>
<tr>
<td>ES13-117</td>
<td>Training in Renewable Energy Systems for Small Farms to Reduce Energy Costs and Improve Profitability</td>
<td>$78,128</td>
<td>Dr. Geoff Zehnder Clemson University</td>
</tr>
</tbody>
</table>
ES11-108  Pollinator Conservation Short Course  $92,066  Eric Mader  The Xerces Society

ES10-106  On-Farm Training in Organic Pest Management Practices for Small, Diversified Farms  $83,775  Dr. Geoff Zehnder  Clemson University

ES02-064  Calhoun Fields Laboratory: A Program for Experiential Training in Organic Farming Systems  $49,926  Dr. Geoff Zehnder  Clemson University

ES01-057  South Carolina Farm and Forest Land Conservation Training  $25,428  Ben Boozer  Clemson Institute for Economic & Community Develop

ES97-018  The First Requirement of Agriculture Sustainability: Efficient Management of Available Resources  $60,000  Charles Q. Artis  South Carolina State University, Community and Economic Development

ES97-017  Overcoming Training Obstacles: A Realistic Cost-Effective Approach  $10,000  Charles Q. Artis  South Carolina State University, Community and Economic Development

LST94-006  Extending Sustainable Agriculture Concepts and Practices to Traditional Agricultural Advisors  $11,700  Jim Palmer  Clemson

FARMER/RANCHER GRANTS

<table>
<thead>
<tr>
<th>Project #</th>
<th>Project Title</th>
<th>SARE Support</th>
<th>Project Leaders</th>
</tr>
</thead>
</table>
| FS22-341  | Does reduction of nitrate inputs in pasture land treated with Chlorella vulgaris result in cost savings and healthier soil and grass? | $10,975      | Dale Snyder  
|           | Sweetgrass Garden Co-op                                                       |              |                |
| FS21-330  | Does Treatment with Chlorella vulgaris Extend the Life of Tomato Plants to Increase Tomato Sales? | $14,640      | Dale Snyder  
|           | Sweetgrass Garden Co-op                                                       |              |                |
| FS20-326  | Summer Cover Crops for Organic No-till Broccoli                               | $14,820      | Sarah Belk  
|           | Wild Hope Farm                                                                |              |                |
| FS18-309  | Studying the Use of Copper to Raise Healthier Goats                           | $10,000      | Judy Langley  
|           | Windy Hill Farm                                                               |              |                |
| FS17-300  | Scaling Indigo Production in South Carolina                                   | $5,965       | Kathy McCullough 
|           | Farmer                                                                       |              |                |
| FS16-288  | Modified Method for Roller-Crimper No Till System in the Southeast Coastal Plain | $8,327       | Mary Connor  
|           | Three Sisters Farm                                                           |              |                |
| FS14-284  | Is freshwater fish compost as effective as saltwater fish compost on vegetable production? | $10,000      | Dale Snyder  
|           | Sweetgrass Garden Co-op                                                       |              |                |
| FS13-276  | Shade cloth for fall bearing blackberry druplet abortion/malfunction problems in southeastern USA | $6,458       | Walker Miller  
|           | The Happy Berry Bunch                                                         |              |                |
| FS11-257  | Is Fish Waste Compost worth the Mess and Effort?                              | $9,848       | Dale Snyder  
|           | Sweetgrass Garden Co-op                                                       |              |                |
| FS11-255  | Cucumber Pollination with Bumblebees                                          | $8,530       | David MacFawn  
|           | Rawl Farms                                                                   |              |                |
Using Buckwheat to Attract Beneficial Insects for Crop Protection  
Daniel Parson  
Parson Produce

Forage Chicory Use in Rotational Grazing of Sheep to Reduce Intestinal Worms, Reduce Grain Supplementation, And Maximize Growth  
Kathy McCaskill  
Old McCaskill's Farm

Dual Season Organic Asparagus Production  
Mary Connor  
Three Sisters Farm

Edamame Variety Trials for the Local Fresh Market  
Carolyn A. Prince

Cattle Lane Construction Alternatives That Enhance Intensive Grazing Systems  
Tom Trantham  
Trantham's Dairy Farm

Demonstration of a Low-Input Diversified Small Farm Operation  
Theodore Nesmith

Red Plastic Mulch as an Alternative to Insecticides in Production of Seedless Watermelons  
John Frazier

Cover Crops in Integrated Vegetable Production Systems  
Charles Wingard  
W.P. Rawl & Sons Farms

Vegetable Marketing Strategies for a Small Farm Co-op  
Curtis Inabinett  
Sea Island Farmers Co-op

Clover Cover Crops, Weed Management and Consumer Tolerance to Insect Damage  
Horace & Shaw Skipper  
The Berry Patch

**GRADUATE STUDENT GRANTS**

<table>
<thead>
<tr>
<th>Project #</th>
<th>Project Title</th>
<th>SARE Support</th>
<th>Project Leaders</th>
</tr>
</thead>
</table>
| GS22-263   | Development and Phenotypic Evaluation of a Brassica oleracea Leafy Greens Diversity Panel | $16,500      | Dr. Sandra Branham  
Clemson University  
Khushwinder Kaur  
Clemson University |
| GS22-259   | PRECISION: leveraging deePREinforCement learning algorithm for Sustainable IrrigatiON scheduling | $16,500      | Dr. Vidya (Seyedehzahra) Samadi  
Clemson University  
Lisa Umutoni  
Clemson University |
| GS18-192   | Cover Cropping to Improve Soil Moisture Content for the Following Cash Crop   | $16,496      | Dr. Sruthi Narayanan  
Clemson University  
Ricardo St. Aime  
Clemson University |
| GS17-174   | Optimizing Nutritional Management in Fruit Tree Production in Southern U.S.   | $16,441      | Juan Carlos Melgar  
Clemson University  
Qi Zhou  
Clemson University |
| GS13-126   | Weeds, Nitrogen, and Yield: Measuring the Effectiveness of an Organic No-Till System | $10,927      | Dr. Geoff Zehnder  
Clemson University  
David Robb  
Clemson University |
| GS04-041   | Preliminary Investigation for Application of Supercritical Fluid Extraction Technology for Garlic Oil Extraction | $10,000      | Dr. Terry Walker  
Clemson University  
Meidui Dong  
Clemson University |
### ON FARM RESEARCH/PARTNERSHIP GRANTS

<table>
<thead>
<tr>
<th>Project #</th>
<th>Project Title</th>
<th>SARE Support</th>
<th>Project Leaders</th>
</tr>
</thead>
<tbody>
<tr>
<td>OS20-133</td>
<td>The Potential of Inter-seeded Cover Crops for Enhancing Soil Health and Soil Moisture Content in a Row Crop Production System</td>
<td>$20,000</td>
<td>Dr. Sruthi Narayanan&lt;br&gt;Clemson University</td>
</tr>
<tr>
<td>OS18-118</td>
<td>Cover Cropping to Increase the Sustainability of Cropping Systems by Developing Soil Organic Matter, Improving Soil Health, and Suppressing Weed Growth</td>
<td>$15,000</td>
<td>Dr. Sruthi Narayanan&lt;br&gt;Clemson University</td>
</tr>
<tr>
<td>OS17-109</td>
<td>Identification of Factors Involved in Peach Skin Streaking</td>
<td>$15,000</td>
<td>Guido Schnabel&lt;br&gt;Clemson University</td>
</tr>
<tr>
<td>OS16-094</td>
<td>Fruit Bagging as a Strategy to Reduce Reliance on Pesticides for the Production of Peaches in the Southeast</td>
<td>$14,967</td>
<td>Juan Carlos Melgar&lt;br&gt;Clemson University</td>
</tr>
<tr>
<td>OS16-093</td>
<td>Increasing Sustainability of Peanut, Cotton, and Soybean Production Systems Through Innovative Interseeding Technology to Enhance Farm Profit and Reduce Pest Occurrence</td>
<td>$14,990</td>
<td>Daniel Anco&lt;br&gt;Clemson University</td>
</tr>
<tr>
<td>OS16-096</td>
<td>Cover Crop Influence on Stored Soil Water Availability to Subsequent Crops</td>
<td>$14,995</td>
<td>Dr. Sruthi Narayanan&lt;br&gt;Clemson University</td>
</tr>
<tr>
<td>OS16-100</td>
<td>Getting to the Bottom of ‘Bronzing’, A Peach Skin Disorder Causing Severe Losses for Organic and Conventional Peach Growers</td>
<td>$15,000</td>
<td>Guido Schnabel&lt;br&gt;Clemson University</td>
</tr>
<tr>
<td>OS07-035</td>
<td>On-Farm Use of a Hybrid Vetch Cover Crop to Reduce Fusarium Wilt in Seedless Watermelon</td>
<td>$9,900</td>
<td>Anthony Keinath&lt;br&gt;Clemson University</td>
</tr>
<tr>
<td>OS03-013</td>
<td>Growing Organic Fruits and Vegetables for Local Farmer’s Markets</td>
<td>$9,925</td>
<td>York Glover</td>
</tr>
<tr>
<td>OS03-010</td>
<td>Poultry Litter Research Project</td>
<td>$12,600</td>
<td>David Gunter&lt;br&gt;Clemson Extension Service</td>
</tr>
</tbody>
</table>

### SUSTAINABLE COMMUNITY INNOVATION GRANTS

<table>
<thead>
<tr>
<th>Project #</th>
<th>Project Title</th>
<th>SARE Support</th>
<th>Project Leaders</th>
</tr>
</thead>
<tbody>
<tr>
<td>CS12-087</td>
<td>Fighting Obesity in Schools By Changing Eating Habits of Students</td>
<td>$10,000</td>
<td>Robert Behr&lt;br&gt;Ashley Ridge High School</td>
</tr>
<tr>
<td>CS10-078</td>
<td>GrowFood Carolina</td>
<td>$10,000</td>
<td>Lisa Turansky&lt;br&gt;South Carolina Coastal Conservation League</td>
</tr>
<tr>
<td>Project ID</td>
<td>Project Title</td>
<td>Funding</td>
<td>Contact Person</td>
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<tr>
<td>CS08-064</td>
<td>Growing the Manning Farmer’s Market</td>
<td>$5,050</td>
<td>Rebecca Rhodes</td>
</tr>
<tr>
<td>CS08-065</td>
<td>Marshview Community Organic Farms – Young Farmers of the Lowcountry</td>
<td>$9,700</td>
<td>Sara Reynolds</td>
</tr>
<tr>
<td>CS07-058</td>
<td>Farmers Market Support Activities</td>
<td>$2,570</td>
<td>Grady Sampson</td>
</tr>
<tr>
<td>CS07-059</td>
<td>Chicora Farmers Market</td>
<td>$6,300</td>
<td>Amanda Crump</td>
</tr>
</tbody>
</table>

**Total funding from the USDA SARE program to South Carolina**

$4,557,644

For further information on projects, contact 770-412-4787 or ssare@uga.edu.
Sustainable Agriculture Research and Education (SARE) is funded by USDA’s National Institute of Food and Agriculture (NIFA).